REMARKS

Applicant acknowledges with appreciation the personal interview granted in the present application on June 12, 2002.

Claims 1-15 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Iwasa et al. (U.S. Patent 5,978,403) and in view of Shino et al. (U.S. Patent 6,195,075).

Applicant acknowledges with thanks the personal interview which was attended by Examiner Wu and Examiner Abdulselam. During the course of the interview, Applicant's representative respectfully disagreed with the rejection of claim 3. Claim 3 specifically recites how the discharge time is set. Applicant's specific recitation of how the discharge time is set is neither disclosed by suggested by the art of record.

During the interview, Applicant's representative argued that Shino discloses nothing about discharge time. In response, the Examiners argued that Figure 6 "inherently" discloses discharge time. Applicant's representative respectfully disagreed with that position. The fact that Figure 6 of Shino relates to efficiency fails to satisfy USPTO requirements for establishing an argument based on inherentcy. Efficiency can relate to almost anything – reading discharge time into an efficiency graph is improper.

During the interview, reference was also made to Shino at column 16, lines 1-17. As set forth above, Applicant's specific details regarding setting of discharge time is set forth in Applicant's claim 3 is absent from Shino at column 16, lines 1-17. Accordingly, the rejection is improper.

As Applicant's representative has done nothing more than incorporate Applicant's claim 3 into claim 1, a new search is not necessitated by this Amendment. In any event, Applicant's claims should be allowed for the reasons set forth below.

Iwasa discloses a two-dimensional device array including laser elements arranged in two dimensions in an elongated region which is longer in the horizontal direction than in the vertical direction (see abstract). The device array includes n laser elements arranged in the horizontal direction, and m laser elements arranged in the vertical direction, where n is greater than m (see abstract).

Shino discloses a plasma display device having a three-dimensional matrix wiring arrangement of anode, cathode and address electrodes (see abstract). Shino also discloses a method for driving a plasma display device wherein a sustained discharge time up to twenty times as long as a conventional sustained discharge time can be secured (see column 16, line 9-14).

Applicant's invention, as recited by amended claim 1, includes a feature which is neither disclosed nor suggested by the art of record, namely:

> said display controller comprises a setting unit for setting the discharge time for discharging the accumulated charge of said light emitting elements before light emission of the light emitting elements, and operates and controls said anode control circuit and said cathode control circuit for discharging the accumulated charge of said light emitting elements within said set discharge time . . .

the luminance of said light emitting elements when emitting light in a no-charge or almost no-charge accumulated state to be Le, and the luminance by actual light emission to be Lp, the relationship between Le and Lp is $Lp \geqq 0.9 \times Le$ and further the discharge time for satisfying a luminance reaching rate in the display device to be Tx, and the discharge time Rt of actual discharge is determined to satisfy the relationship of $Tx \leqq Rt$.

This means that the display device recited in claim 1 includes a display controller. The display controller includes a setting unit for setting the discharge time for discharging the accumulated charge of a light emitting element before light emission of the light emitting element. The accumulated charge of the light emitting elements is discharged within the set discharge time.

Further, the display device recited in claim 1 includes the following relationship:

$$Lp \geqq 0.9 \times Le,$$

where Le is the luminance of the light emitting element when emitting light in a no-charge or an almost no-charge accumulated state, and Lp is the luminance by actual light emission.

Further still, the display device of claim 1 includes the following relationship:

$$Tx \leqq Rt,$$

where Tx is the discharge time for satisfying a luminance reaching rate in the display device, and Rt is the discharge time of actual discharge.

These features are found in the originally filed application at page 7, line 11-20, and page 15, lines 9-13. No new matter has been added.

As indicated in the Office Action, Iwasa does not disclose a display device including a display controller that includes a setting unit for setting the discharge time for discharging the accumulated charge of a light emitting element before light emission of the light emitting element. As such, the Office Action relies on Shino to disclose the claimed features relating to discharge time.

The Shino reference does disclose the concept of discharge time. For example, Shino discloses a method for driving a plasma display device that can secure a sustained discharge time up to twenty times as long as the conventionally required sustained discharge time (see column 16, lines 9-14). However, Shino does not disclose a display device including a display controller that includes a setting unit for setting the discharge time for timing the accumulated charge of the light emitting elements before light emission of the light emitting elements. Further, Shino does not disclose discharging the accumulated charge of the light emitting elements within the set discharge time. Further still, Shino does not disclose or suggest the above-recited relationships of claim 1 relating to discharge time. For example, Shino does not disclose or suggest $Lp \geqq 0.9 \times Le$, where Le is the luminance of the light emitting element when emitting light is in a no-charge or almost no-charge accumulated state, and Lp is the luminance by the actual light emission. Additionally, Shino does not disclose or suggest $Tx \leqq Rt$, where Tx is the discharge time for satisfying a luminance reaching rate in the display device, and Rt is the discharge time of actual discharge.

As such, the disclosure relating to the discharge time included in Shino is very different from the above-recited features included in claim 1. As such, even by combining Shino and Iwasa, Applicant's claimed display device is not achieved.

It is because Applicant includes the above-recited features of claim 1, that the following advantages are achieved. By properly setting the discharge time Rt, the electric charge accumulated in the light emitting element can be removed effectively. As a result, the driving efficiency is improved. Further, the conventional defect of an apparent lowering of the display luminance is also improved. Further still, the display device is higher in driving speed, superior in reliability, lower in price, and smaller in size (see page 7, line 21 through page 8, line 2).

Accordingly, for the reasons set forth above, claim 1 is patentable over the art of record.

Independent claims 5, 9, and 13 include features similar to those discussed above with respect to claim 1. Accordingly, claims 5, 9, and 13, are also patentable over the art of record for the reasons set forth above. Claims 2-4, 6-8, 10-12, and 14-15 include all of the features of either claim 1, 5, 9, or 13, from which they depend, either directly or indirectly. Thus, claims 2-4, 6-8, 10-12, and 14-15 are also patentable over the art of record for the reasons set forth above.

In view of the amendments and arguments set forth above, the above-identified application is in condition for allowance which action is respectfully requested.

Respectfully Submitted,
RatnerPrestia

Lawrence E. Ashery, Reg. No. 34,515
Attorney for Applicant

CMS/mc/mjc/jam
Dated: August 2, 2002
Enclosures: Version with markings to show changes made
Petition for Extension of Time

Suite 301
One Westlakes, Berwyn
P.O. Box 980
Valley Forge, PA 19482-0980
(610) 407-0700

The Assistant Commissioner for Patents is hereby authorized to charge payment to Deposit Account No. **18-0350** of any fees associated with this communication.

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail, with sufficient postage, in an envelope addressed to: Assistant Commissioner for Patents, Washington, D.C. 20231 on:

August 2, 2002

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

Claim 3 has been cancelled.

1. (As Amended) A display device comprising:

a. a plurality of cathode wires,

b. a plurality of anode wires arranged in a matrix shape together with said plurality of cathode wires,

c. light emitting elements disposed between said plurality of cathode wires and anode wires,

d. a current source to said anode wires,

e. a voltage source to said cathode wires,

f. an anode control circuit for connecting between said anode wires and said current source,

g. a cathode control circuit for connecting between said cathode wires and said voltage source, [and]

h. a display controller for controlling said anode control circuit and said cathode control circuit,

i. wherein said display controller comprises a setting unit for setting the discharge time for discharging the accumulated charge of said light emitting elements before light emission of the light emitting elements, and operates and controls said anode control circuit and said cathode control circuit for discharging the accumulated charge of said light emitting elements within said set discharge time, and also operates and controls said anode control

circuit and said cathode control circuit for emitting said light emitting elements after discharge control of said accumulated charge[.], and

j. wherein the luminance of said light emitting elements when emitting light in a no-charge or almost no-charge accumulated state to be Le, and the luminance by actual light emission to be Lp, the relationship between Le and Lp is

$$Lp > 0.9 \times Le$$

and further the discharge time for satisfying a luminance reaching rate in the display device to be Tx, and the discharge time Rt of actual discharge is determined to satisfy the relationship of

$$Tx < Rt.$$

4. (As Amended) The display device of claim [3] 1, wherein the discharge time Rt is set to satisfy the relation of

$$Rt < B \times Tx \text{ (where } 1 < B < 10)$$

where Rt is the discharge time of actual discharge, and Tx is the discharge time.